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Substitute Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office **Information Disclosure Statement by Applicant** (Use several sheets if necessary) (37 CFR §1.98(b))	Attorney's Docket No. 09945-006001	Application No. 09/921,181
	Applicant Mark Chiapetta	
	Filing Date August 2, 2001	Group Art Unit 3662

U.S. Patent Documents

Examiner Initial	Desig. ID	Patent Number	Issue Date	Patentee	Class	Subclass	Filing Date If Appropriate
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						

Foreign Patent Documents or Published Foreign Patent Applications

Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation	
							Yes	No
	AJ							
	AK							
	AL							
	AM							

Other Documents (include Author, Title, Date, and Place of Publication)

Examiner Initial	Desig. ID	Document
	AN	Borenstein and Koren, "Noise Rejection for Ultrasonic Sensors in Mobile Robot Applications", Proceeding of the 1992 IEEE International Conference on Robotics and Automation, Nice, France, 1727-1732, 1992.
	AO	Kuc and Siegel, "Efficient Representation of Reflecting Structures for a Sonar Naviagtion Model", IEEE, pp. 1916-1923, 1987.
	AP	Kuc and Viard, "Guiding Vehicles with Sonar: The Edge Problem", IEEE 1988 Ultrasonics Symposium, Chicago, Illinois, pp. 1-4.
	AQ	Parnis and Drazan, "Recognition of unreliable ultrasonic range data in a robotic environment", 7 pages, 1988.
	AR	Sabatini, AM, "Active Hearing for External Imaging Based on an Ultrasonic Transducer Array", Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC, July 7-10, 1992, pp. 829-836.

Examiner Signature	Date Considered 11-12-2002
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	AA	US 4,620,285	10/28/86	Perdue	—	—	
	AB	US 4,679,152	07/07/87	Perdue	—	—	
	AC	US 5,438,247	08/01/95	Kim *et al.*	—	—	
	AD	US 5,277,064	01/11/94	Leszcynski	—	—	

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Examiner Initial	Desig. ID	Document
	AF	Blazevic *et al.*, "Mobile robot using ultrasonic sensors: study of a degraded mode" *Robotica* 9:365-370, 1991.
	AG	Borenstein *et al.*, "Noise Rejection for Ultrasonic Sensors in Mobile Robot Applications", Proceeding of the 1992 IEEE International Conference on Robotics and Automation, Nice, France, 1727-1732, 1992.
	AH	Bozma *et al.*, "Building a Sonar Map in a Specular Environment Using A Single Mobile Sensor" *IEEE Transactions on Pattern Analysis and Machine Intelligence* 13:(12):1260-1269, 1991.
	AI	Bozma *et al.*, "Characterizing the Environment Using Echo Energy, Duration, and Range: the ENDURA Method" *Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC*, 813-820, 1992.
	AJ	Drotning *et al.*, "A VMEbus Ultrasonic Sensor Controller for Mapping and Servo Control in Robotic Systems" *Intelligent Systems Department II, Sandia National Laboratories, Albuquerque, NM*, 37-44.
	AK	Elfes "A Sonar-Based Mapping and Navigational System" *IEEE*, 1151-1156, 1986.
	AL	Everett "A Multi-Element Ultra Sonic Ranging Array" *Naval Sea Systems Command, Washington, DC*, pp. i-58, 1985.
	AM	Higuchi *et al.*, "B-Mode Imaging Using Si Ultrasonic Image Sensor" *Microelectronics Research Laboratories, NEC Corporation, Shimokuzawa, Sagamihara, Kanagawa 229, Japan, R&D Laboratory, NEC Home Electronics Ltd., Takatsu-ku, Kawasaki, Kanagawa 213, Japan, C&C Systems Research Laboratories, NEC Corporation, Miyamae-ku, Kawasaki, Kanagawa 213, Japan*, 1-6, Figs. 1-8.
	AN	Horiguchi "A Digital Phase Delay Compensation Beam-Forming Scheme for Ultrasonic Imaging" *Journal of Applied Physics* 27(27-1):215-217, 1988.
	AO	Hong *et al.*, "Analysis of Ultrasonic Differentiation of Three Dimensional Corners, Edges and Planes", *Proceedings of the 1992 IEEE, International Conference on Robotics and Automation, Nice, France*, 580-584, 1992.

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	AP	Kay "Airborne Ultrasonic Imaging of a Robot Workspace" University of Canterbury, New Zealand, 287-296.
	AQ	Kuc "Three-dimensional tracking using qualitative bionic sonar" Robotics and Autonomous Systems *Elsevier Science* 11:213-219, 1993.
	AR	Kuc *et al.*, "Docking Mobile Robots Using a Bat-like Sonar" *Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC*, 1439-1444, 1992.
	AS	Kuc *et al.*, "Navigating Vehicles Through an Unstructured Environment with Sonar", IEEE, 1422-1426, 1989.
	AT	Kuc *et al.*, "A Physically Based Navigation Strategy for Sonar-Guided Vehicles", The International Journal of Robotics Research 10(2):75-87, 1991.
	AU	Kuc *et al.*, "Efficient Representation of Reflecting Structures for a Sonar Navigation Model" *IEEE*, 1916-1923, 1987.
	AV	Kuc *et al.*, "Guiding Vehicles with Sonar: The Edge Problem" *Dept. of Electrical Engineering, Yale University, New Haven, CT* 06520, 1-4.
	AW	Kuroda et al., "Ultrasonic Imaging System for Robots Using an Electronic Scanning Method" Robot Sensors, 271-285.
	AX	Lang *et al.*, "Characterizing and modeling a sonar ring" *Mobile Robots IV* 1195:291-304, 1989.
	AY	Langer *et al.*, "Sonar based Outdoor Vehicle Navigation and Collision Avoidance" *Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC*, 1445-1450, 1992.
	AZ	LeMay *et al.*, "Error Minimization and Redundancy Management for a Three Dimensional Ultrasonic Ranging System" *Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC*, 837-844, 1992.
	AAA	Lim *et al.*, "Physically Based Sensor Modeling for a Sonar Map in a Specular Environment" *Proceedings of the 1992 IEEE International Conference on Robotics and Automation, Nice, France*, 1714-1719, 1992.
	ABB	Mataric "Qualitative Sonar Based Environment Learning for Mobile Robots" *Mobile Robots IV* 1195:305-314, 1989.
	ACC	Matthies *et al.*, "Integration of Sonar and Stereo Range Data Using a Grid-Based Representation" *IEEE*, 232-238, 1988.
	BA	McKerrow *et al.*, "An Introduction to the Physics of Echolocation" *Third Conference on Robotics, Australian Robot Association*, 1-19, 1990.
	BB	McKerrow "Simulation of Sonar Echolocation" *Dept. of Computing Science, University of Wollongong, Australia*, 10 pages.
	BC	Morcuo *et al.*, "Mobile Robot Multitarget Tracking in Dynamic Environments" *Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC*, 1464-1469, 1992.
	BD	Nagashima *et al.*, "Ultrasonic sensing for a mobile robot to recognize an environment – Measuring the normal direction of walls –" *Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC*, 805-812, 1992.
	BE	Parnis *et al.*, "Recognition of unreliable ultrasonic range data in a robotic environment" *MEMS*, 1988.

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	BF	Pomeroy *et al.*, "Ultrasonic Distance Measuring and Imaging Systems for Industrial Robots", *Robot Sensors* 2:261-270, 1986.
	BG	Pomeroy *et al.*, "Evaluation of ultrasonic inspection and imaging systems for robotics using TLM modelling" *Robotica* 9:283-290, 1991.
	BH	Rafiq *et al.*, "The performance of capacitive ultrasonic transducers using v-grooved backplates" *Meas. Sci. Technol.* 2:168-174, 1991.
	BI	Sabatini "Active hearing for External Imaging Based on an Ultrasonic Transducer Array" Proceeding of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC , 829-836, 1992.
	BJ	Sasaki et al., "Classification of Objects' Surface by Acoustic Transfer Function" *Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC*, 821-828, 1992.
	BK	Sun *et al.*, "Computer simulation of sensor-based robot collision avoidance in an unknown environment" *Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and System, Raleigh, NC*, 291-302, 1986.
	BL	Takanashi *et al.*, "A Robotic Ultrasonic Imaging System Using A Si Phased-array Receiver" *Industrial Symposium Industrial Robots, Kawaski, Japan*, 6 pages, 1989.
	BM	Walter "The Sonar Ring: Obstacle Detection for a Mobile Robot" *IEEE* 1574-1579, 1987.
	BN	van Turennout *et al.*, "Following a Wall with a Mobile Robot using Ultrasonic Sensors" *Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC*, 1451-1456, 1992.
	BO	Yang *et al.*, "Design of Ultrasonic Linear Array System for Multi-Object Identification" *Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC*, 1625-1632, 1992.
	BP	"4. The Tympanic-nerve Response in Noctuid Moths" *Tympanic Response in Moths*, 34-99.

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DP	AA	US 5,717,169	02/10/98	Liang et al.	—	—	
DP	AB	US 3,929,006	12/30/75	Boggs et al.	—	—	
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